osmotic hypothesis, especially in relation to the ion-impermeable coupling membrane and the proton-translocating ATP phosphohydrolase. Consideration is also given to the localized proton hypothesis which was absent from the first edition. The majority of the subsections in this chapter are complemented by relevant diagrams which are a prerequisite for a clear exposition of some of the rather complex concepts which are outlined.

My overall impression is that in a series of this nature, the rapid advance of knowledge in specific areas highlights the necessity of constantly up-dating the published information. The second edition of this text fulfils such a requirement and without doubt will be both read and welcomed by a large number of people.

R. F. G. Booth

The Biochemistry of Plants: A Comprehensive Treatise – Vol. 6: Proteins and Nucleic Acids

Editors-in-Chief: P. K. Stumpf and E. E. Conn

Vol. 6 edited by A. Marcus
Academic Press; London, New York, Toronto, 1981
xiv + 658 pages. $67.50

Since 1960 when J. Bonner wrote 'There is much work to be done in plant biochemistry' there has been an explosive expansion of knowledge in biochemistry as a whole. However, until recently study of plants has had a mixed reception. Plants, it was argued, had features that made them difficult experimental organisms. Recent developments in molecular biology and biotechnology could well counter this prejudice and permit a focus on important agricultural problems. As the Editors of this very timely treatise point out, the most prevalent disease in the world is starvation.

Volume 6 of this 8-volume series covers plant proteins and nucleic acids. Unfortunately it gets off to a slightly damp start as the first chapter on the structure and function of the nuclear genome (Thompson and Murray) is acknowledged to be two years out of date. Nevertheless it contains a goodly proportion of useful basic data on overall sequence organisation in a wide variety of plants, as well as information on chromatin components. This is followed by a fairly general chapter by Flashman and Levings on how nucleases can be applied to sequence analysis, gene isolation and cloning of particular genes. Dyer and Jones then contribute an excellent chapter on plant RNAs and the complex area of nucleotide biosynthesis is competently covered by Ross.

A state-of-the-art survey of plant DNA and RNA polymerases by Guilfoyle follows, and the recent advances in our understanding of plant organelle genome organisation are highlighted by Edelman. Steinback then lucidly documents the intricacies of chloroplast protein biosynthesis with the interplay of nuclear and chloroplast chromosomes, as well as the transport and post-translational modifications involved. An odd omission from this volume is a survey of the situation with regard to plant mitochondrial protein synthesis. There is however a chapter on general protein synthesis by Weeks. This is not particularly orientated to the plant scene, rather it deals with the overall mechanistic aspects.

Interest in proteolysis reflects interest in processes important to agriculture and plant physiology. Most of our knowledge comes from animal and microbial enzyme studies, but the stimulating chapter by Ryan and Walker-Simmons details the plant situation. Ryan follows this with a survey of protease inhibitors. Here interest has expanded from effects on human food chain to possible roles in plant metabolism and natural protective systems.

A chapter on lectins by Lis and Sharon will be an extremely useful reference source for lectin users, as well as providing information on possible natural rôles. Larkins deals with seed storage proteins which are of obvious nutritional economic importance.

The final chapters on tumour formation and plant viruses by Gordon and Bruening, respectively, cover two specific areas where plant nucleic acid involvement is of prime biological importance. Future opportunities for advantageous and realistic genetic engineering are discussed.

This volume on its own will certainly serve as a key source of information for some while. It will also provide a mechanism, as the Editors hoped, whereby other biochemists might be inspired by the unique problems which the plant cell provides both economically and scientifically.

R. H. Burdon

Platelets: Cellular Response Mechanisms and their Biological Significance

Edited by A. Rotman, F. A. Meyer, C. Gitler and A. Silberberg
Wiley; Chichester, New York, 1980
xii + 328 pages. £17.50

This book contains the proceedings of an EMBO workshop held at the Weizmann Institute in April 1980. Like all books of this type, the contributions vary considerably in length and scope, some relying almost entirely on previously unpublished experimental evidence and others giving an overview mainly reflecting the authors' own work or views. This is not necessarily a disadvantage and the reader interested in platelets either for their function in haemostasis and cardiovascular disease or for their appropriateness as models of neurones and other secretory cells will find much of interest.

The volume is split into 4 sections somewhat arbitrarily, the first dealing with platelet function, the second with platelet membrane structure and receptors, the third intracellular platelet response and the last with platelet pharmacology. In all cases the approach is from the molecular level and is concerned largely with the role of membrane proteins and lipids in initiating (perhaps by Ca^{2+} redistribution) the processes leading to shape change, adhesion, aggregation and release of granule contents by platelets. A welcome feature is the realisation by the majority of authors that these processes are separable and that the mechanism of each may differ. The overwhelming impression from the book is that for such a small cell fragment the platelet seems astonishingly complex and for the enormous amount of work expended by these eminent contributors its function still seems remarkably obscure. Despite this, the book is recommended for anyone already working in the field or indeed looking for an easily obtainable model of human cells. There are a fair number of typographical errors but the editors and publishers must take credit for getting these proceedings out so rapidly.

John Littleton